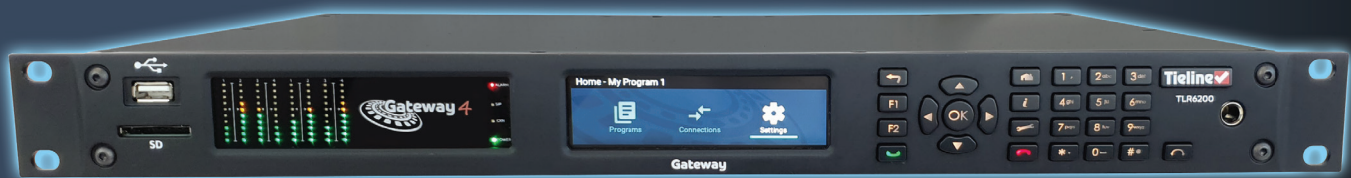


Gateway 4



The New Generation 4 Channel IP Audio Codec

The Gateway 4 provides two stereo connections, or one stereo and two mono connections, or up to 4 mono connections.

AoIP Protocols

AES67 | ST 2110-30 | ST 2022-7 | WheatNet-IP

Livewire+ | RAVENNA | Dante | NMOS | Ember+



www.tieline.com

Tieline® 
The Codec Company

Gateway 4 (TLR6200-4)

The Gateway 4 is a powerful DSP-based 1RU IP codec designed for live remote broadcasting applications, as well as STL or SSL links. The Gateway 4 enables transport of multiple channels of mono or stereo audio across the Public Internet or any QoS-enabled IP network, including T1 and T3 connections and private WANs with MPLS.

Gateway 4 Speaks More Languages...

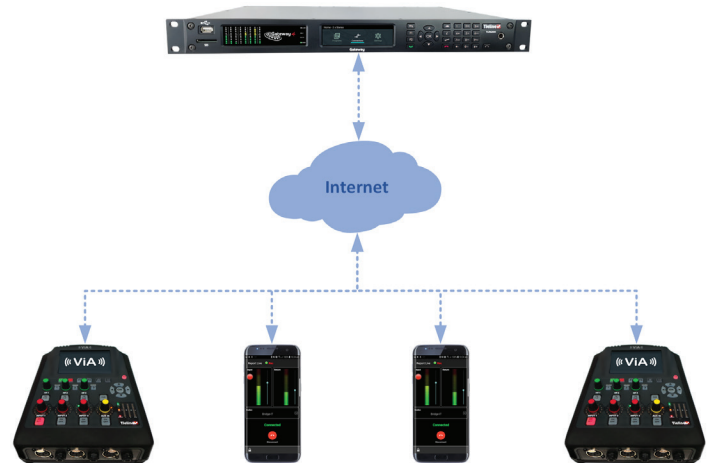
The Gateway 4 streams up to 4 IP audio channels with support for AES67, ST 2110-30, ST 2022-7, RAVENNA, Livewire+™, NMOS IS-04 and IS-05, Ember+, AES3 and analog I/O as standard. An optional WheatNet-IP card available at purchase delivers WheatNet-IP compliant streaming, or an optional Dante®¹ card can be installed at purchase to support Dante AoIP networking. With native support for AES67, ST 2110-30, ST2022-7, Livewire+ and RAVENNA, plus options like WheatNet-IP and Dante¹, the Gateway 4 delivers comprehensive AoIP protocol interoperability with equipment from vendors supporting these standards.

Applications

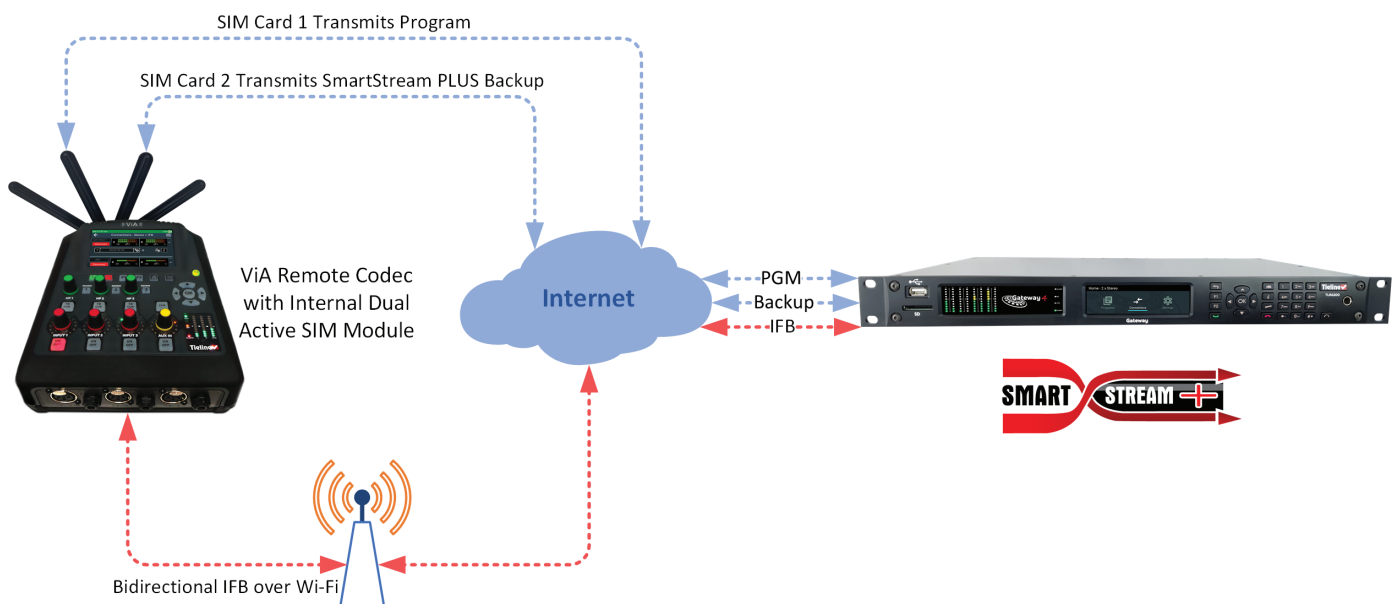
The new generation Gateway 4 delivers best-in-class DSP-based reliability and performance for mission critical broadcast streaming applications. It is ideal for:

- Remote broadcast applications.
- Studio-to-Transmitter Links (STLs)
- Studio-to-Studio Links (SSLs)
- HTTP Icecast or Shoutcast streaming

The Gateway 4 is designed for solutions requiring up to 4 audio streaming channels with advanced redundancy features and remote configuration and control. It supports 4 full-duplex audio channels in 1RU and is backward compatible with all Tieline IP codecs. The Gateway 4 provides two stereo connections, or one stereo and two mono connections, or up to 4 mono connections.



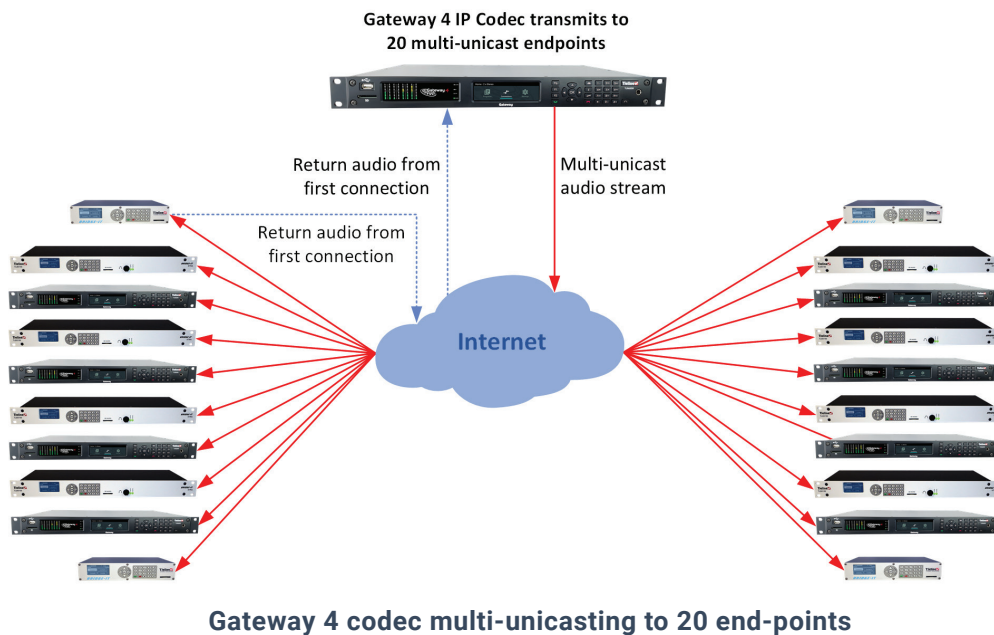
Gateway 4 codec connects 4 full-duplex remote connections to ViA and Report-IT



Gateway 4 codec connects in stereo using SmartStream PLUS over cellular, with IFB over Wi-Fi

For larger networks the Gateway 4 is ideal for transmitter sites, remote trucks or rack-mounted remote kits. For affiliates and smaller stations, it can be used to transport studio-to-studio links, or a stereo studio-to-transmitter link signal plus another stereo connection, or other mono connections for remotes.

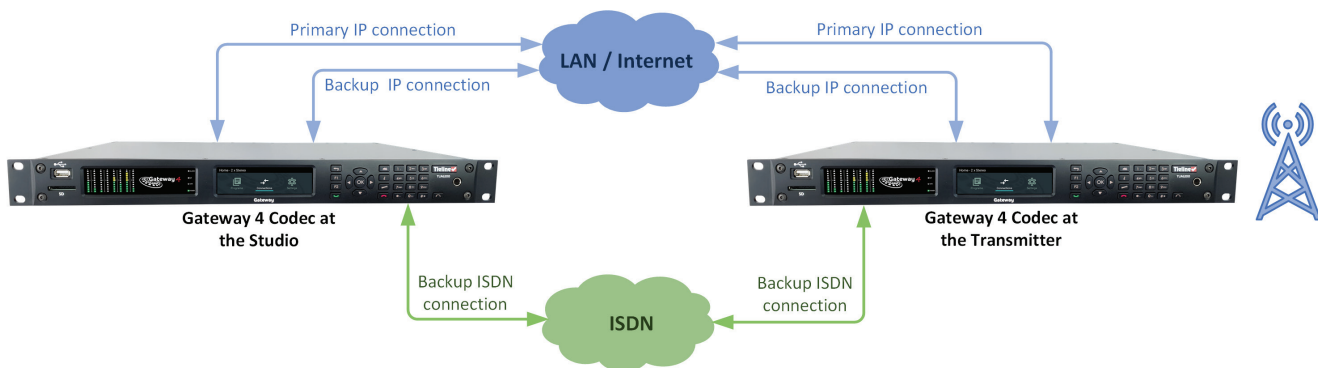
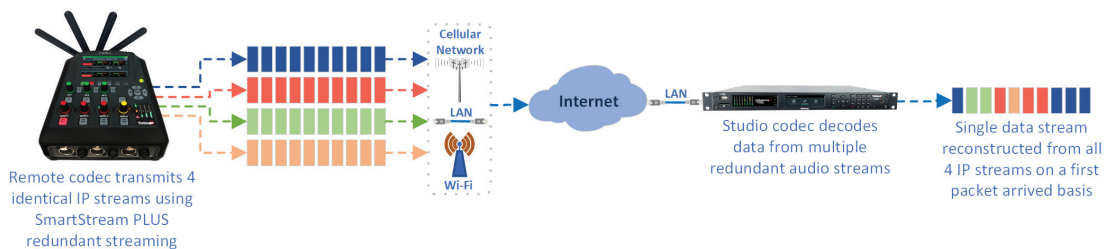
The Gateway 4 also supports multiple unicasting to up to 20 endpoints and multicasting.



Multiple Layers of Redundancy

The Gateway 4 seamlessly integrates with all Tieline IP codecs and delivers hitless packet switching using SmartStream PLUS redundant streaming. A primary and 3 redundant streams can be configured for each connection, delivering multiple layers of IP network redundancy.

The codec also supports bandwidth aggregation using Fuse-IP technologies over internet connections. It features dual internal power supplies, dual LAN ports and dual AoIP ports. Automated network failure detection provides automatic switching to a backup IP LAN connection or fail over to an ISDN connection using an optional Euro ISDN module. Automatic silence detection can fail over to alternative audio sources, including file playback.



WheatNet-IP

Order an optional WheatNet-IP card when you purchase the codec and it will appear as a Blade in Wheatstone's Navigator software.

Dante

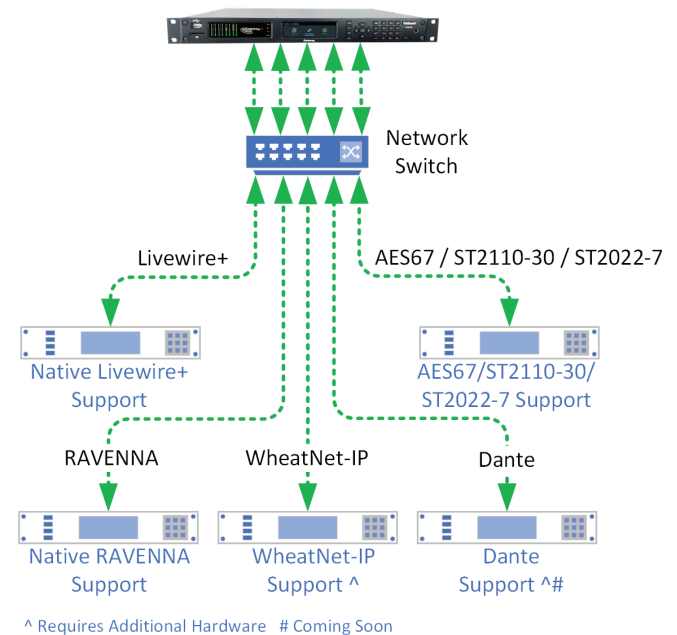
Order an optional Dante¹ card at purchase and seamlessly support stream discovery and advertisement over Dante AoIP networks.

Interoperability and Remote Control

Its feature-rich and compact design is interoperable with all Tieline IP codecs and compatible over SIP with all EBU N/ACIP Tech 3326, 3347 and 3368 compliant codecs and devices. The codec is also fully AES67, ST 2110-30, ST 2022-7, Livewire+ and RAVENNA compliant for AoIP streaming. An optional WheatNet-IP or Dante¹ card can be purchased for seamless operation using these protocols.

The Gateway 4 is also NMOS IS-04 and IS-05 compliant for AoIP discovery, registration and connection management, simplifying setup and configuration of networked AoIP devices and systems. The Ember+ control protocol is also supported.

Maintain connectivity and interoperability with legacy ISDN networks as required with the optional Euro ISDN module and integrate with IP audio streams simultaneously. Gateway is configurable through an embedded HTML5 Toolbox Web-GUI interface and is also fully controllable using Tieline's Cloud Codec Controller.



Gateway 4 codec supports connecting with a variety of AoIP protocols

Key Features

- Up to 4 bidirectional mono or 2 bidirectional stereo IP streams
- Bidirectional stereo plus dual mono IP streams
- 8 hardware GPIOs, plus 3 virtual inputs, 56 logical outputs, and 64 WheatNet or Livewire Logic Inputs/Outputs
- Ideal for contribution/remotes, STL, and SSL applications
- Stream IP audio over WANs using dual Ethernet ports
- Fully AES67, ST 2110-30, ST 2022-7, Livewire+ and RAVENNA compliant for AoIP streaming
- Optional WheatNet card at purchase supports WheatNet-IP.
- Optional Dante¹ card at purchase supports Dante AoIP streaming.
- Interoperable with Dante and WheatNet-IP in AES67 compatibility mode if no card installed.
- Support for Ember+ and NMOS IS-04 and IS-05
- Supports multicasting and multi-unicasting to 20 endpoints
- HTTP Icecast or Shoutcast streaming support
- Dual DSP based platform with dual internal power supplies, dual Ethernet ports, dual AoIP ports, and dual USB ports for firmware upgrades, memory, or Wi-Fi modems
- Supports uncompressed audio or a huge range of encoding options
- USB 2.0 port support firmware upgrades, Wi-Fi modems and USB memory sticks. USB 3.0 will support store and forward
- SD card slot for firmware upgrades and memory options
- Fully SIP EBU N/ACIP 3326, 3368 and 3347 compliant to operate with 3rd party codecs
- Module slot for optional ISDN module, future technologies, and hardware upgrades
- Fully remote control using the Toolbox HTML5 Web-GUI, or the Cloud Codec Controller, plus SNMP support
- Connect simply using the TieLink¹ Traversal Server
- 10 Band EQ, Compressor and IGC Limiting on all analog inputs

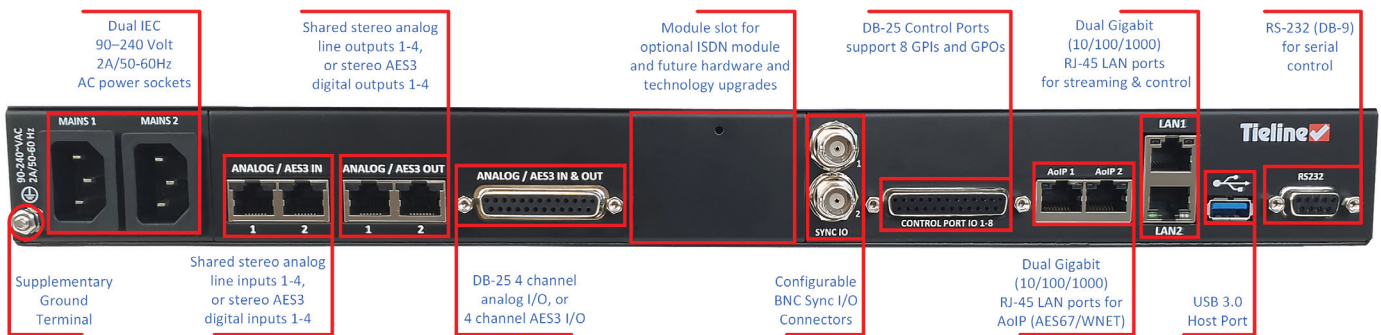
Front Panel Interfaces

The Gateway front panel has 8 PPMs to view input and output streams. It also features a high-quality color LCD screen for at-a-glance monitoring and configuration. Silicon menu, navigation and keypad buttons deliver simple configuration, control and audio monitoring. An SD card slot and USB port allow simple access for firmware upgrades, attaching Wi-Fi USB modems, and additional memory.



Rear Panel Interfaces

The Gateway rear panel facilitates maximum flexibility with support for analog, AES3 and AES67 / ST 2110-30 / ST-2022-7 I/O. Tieline also offers optional WheatNet-IP or Dante¹ compatibility via dual AoIP ports. The codec supports 8 GPIOs as well as software logic I/Os. The module slot allows an optional Euro ISDN module to be installed in the codec for network connection flexibility and redundancy. This module slot can also be used for future hardware innovation upgrades to maximize the effective life of the codec.



| Specifications | |
|--|--|
| Input and Outputs | |
| RJ45 Analog Inputs 1-4/AES3 Inputs 1-4 RJ45 Analog Outputs 1-4/AES3 Outputs 1-4 Female DB-25 Analog/AES I/O Gigabit LAN Ports Gigabit AoIP Streaming Ports USB 2.0 Host Port USB 3.0 Host Port Front Panel Headphone Output Front Panel SD Card Slot Internal SSD Storage Capability BNC Sync Input/Output Female DB-25 Control Port In/Out Analog Input Impedance Analog Output Impedance Clipping Level A/D & D/A Converters AES3 (AES/EBU) Frequency Response Total Harmonic Distortion Signal to Noise Ratio Crosstalk | Shared analog stereo line inputs 1-4, or stereo AES3 digital inputs 1-4 Shared analog stereo line outputs 1-4, or stereo AES3 digital outputs 1-4 Optional analog or digital inputs/outputs x 4 (Tascam pinout) 2 x Gbit Ethernet ports for IP streaming over WANs (4 bidirectional mono, bidirectional stereo plus mono, or 2 bidirectional stereo streams) 2 x Gbit Ethernet ports for AES67/ ST 2110-30/ ST 2022-7 Front panel host port (supports firmware upgrades, Wi-Fi USB modems and memory sticks) Rear panel host port supports record and playback 1 x 6.35mm (1/4") headphone Jack Full size push-push SD card slot for firmware upgrades Internal connector supports optional SSD memory after purchase 2 configurable input/output BNC sync connectors (Wordclock, AES3 Input, AES11id, PTP Sample Clock, and Fixed) Dual DB-25 Control panel support 8 CMOS control inputs and 8 opto-isolated solid-state relay outputs > 10k ohm < 30 ohm balanced Nominal output level +4dBu with maximum output + 24 dBu 24 bit 24 bit inputs with support for sample rates from 32kHz to 192 kHz[2]; 24 bit outputs 20Hz to 22kHz <0.002% at +22dBu unweighted >100dB at +24dBu, unweighted, 20Hz – 20kHz < -95dB between adjacent channels |
| Data and Control | |
| Configuration and connectivity Web Audio Monitoring Serial (DB-9) Software Logic I/Os (SLIO) ISDN | HTML5 Toolbox Web-GUI, Cloud Codec Controller (CCC), TieLink[1] Traversal Server Selectable web audio monitoring[1] of IP audio streams RS232 up to 115kbps with or without CTS/RTS flow control can be used as a proprietary data channel 8 hardware GPIOs, plus 3 virtual inputs, 56 logical outputs, and 64 WheatNet or Livewire Logic Inputs/Outputs Optional via module slot; 2 B channels supported |
| Encoding and IP Streaming | |
| Encoding Formats Uncompressed IP IP Sample Frequencies Phase-locked Surround Sound Channels Asymmetric encoding Protocols SmartStream PLUS Multi-unicasting Multicasting Fuse-IP | Tieline Music, Tieline MusicPLUS, Opus, G.711, G.722, MPEG Layer 2, MPEG Layer-3 LC-AAC, HE-AAC, HE-AACv2, AAC-LD, AAC-ELD, 16/24 bit aptX® Enhanced algorithm, MPEG audio technologies licensed by Fraunhofer IIS (http://www.iis.fraunhofer.de/audio) Linear PCM16/24 bit 32kHz, 44.1kHz, 48kHz, 96kHz sampling 8kHz, 16kHz, 32kHz, 44.1kHz, 48kHz, 96kHz Stream 4 digital channels in phase-locked mode to deliver live surround sound content Supports asymmetric multi-format encoding RTP, DHCP, SNMP, DNS, HTTP, IGMP, IPv4/IPv6, RTCP, STUN, SSL Security Certificate Primary plus 3 redundant streams supported (algorithm dependant) Note: only 1 redundant stream available using TieLink[1] Support for 1 or 2 Multi-unicast streams (20 connections in total) Support for 1 or 2 Multicast streams to unlimited endpoints over compatible IP networks Bond IP interfaces to aggregate data |
| AoIP Standards & Specifications | |
| EBU N/ACIP 3326 I3P EBU Tech 3347 EBU N/ACIP 3368 AES67 Compliant ST 2110-30 Compliant ST 2022-7 Seamless Protection Switching[2] RAVENNA Compliant Livewire+ Compliant NMOS Compliant WheatNet-IP (Optional) Dante (Optional)[1] Supported Audio Frames Clock Modes Supported | Audio Contribution Over IP Compliant Intercom Over IP Compliant SIP Profiles Compliant 44.1kHz, 48kHz, 96kHz Sample rates; 16 & 24 Bit, 1-8 Channels, SDP; supports 1 AES67 stream in 8 Channel mode (up to 4 active channels) Class A, Ax, B, Bx Sender and Receiver Compliant Compliant with requirements for sending multiple redundant streams of RTP packets to enable seamless protection switching. RAVENNA Stream Discovery and Advertisement Livewire+ Stream Discovery and Advertisement NMOS IS-04 & IS-05 Discovery, Registration and Connection Management WheatNet-IP card supports streaming over AoIP1 (4 bidirectional mono or 2 bidirectional stereo) Install an optional Dante card at purchase for Dante AoIP streaming support. 125us, 250us, 333us, 1ms, 4ms Primary Leader (Master), Follower (Slave), Follower Only (Slave Only) |
| Advanced Networking | |
| VLAN Tagging Quality of Service (QoS) Synchronization Multicasting SAP | IEEE 802.1Q,802.1p Support for DiffServ (DSCP) IEEE 1588-2008(PTPV2) IGMP v2 and v3 SAP v2 (Session Announcement Protocol) as defined in RFC 2974 |
| General | |
| Display Keypad Navigation Size Dimensions Weight AC Power Operating Temperature Humidity Operating Range | 24-bit Color LCD Screen (480 x 128 pixels) 26 button silicon keypad 5 navigation and selection buttons 1U x 19" Rackmount 19" x 1 3/4" x 11 13/16" [482mm (W) x 44.45mm (H) x 300mm (D)] excluding rear connectors 4 Kg /8 lb 13.100 oz Dual AC 90-240V IEC power inlets; 2A 50-60 Hz 0°C to 45°C (32°F to 113°F) 10% ≥ RH ≤ 90% (0 to 45°C/32°F to 113°F), non-condensing |

[1] Future release

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